UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

JAN 06 2012

OFFICE OF
ENVIRONMENTAL CLEANUP

CERTIFIED MAIL -- RETURN RECEIPT REQUESTED

EPA WARNING LETTER

Mr. James L. Groh
Branch Manager
JCI Jones Chemicals, Inc.
1919 Marine View Drive
Tacoma, Washington 98422

Re: Risk Management Program Compliance Inspection
JCI Jones Chemical
EPA Facility ID# 1000 0007 8845

Dear Mr. Groh:

On July 13, 2011, the U.S. Environmental Protection Agency (EPA) conducted an inspection of the JCI Jones Chemicals, Inc. facility, located at 1919 Marine View Drive, Tacoma, Washington. The purpose of the inspection was to evaluate compliance with Section 112(r) of the Clean Air Act also known as the Risk Management Program (RMP). The RMP inspection was conducted pursuant to the authorities under Section 112(r) and Section 114 of the Clean Air Act. Listed below are the areas of concern identified by EPA:

> JCI Jones Chemicals, Inc. did not provided documentation and records to demonstrate that the frequency of inspections and tests of all process equipment is consistent with applicable manufacturers' recommendations, good engineering practices, and more frequently if determined to be necessary by prior operating experience as required by 40 CFR 68.73(d)(3). JCI Jones Chemicals, Inc. must establish a written procedure outlining the frequency of inspections and testing for the piping systems and equipment involved with the covered process, chlorine. JCI Jones Chemicals, Inc. referenced the Chlorine Institute Pamphlet #6, Piping System for Dry Chlorine, as an industry standard used for inspections of the chlorine system for mechanical integrity.

Please provide the documentation to substantiate that the areas of concern listed above have been corrected. A copy of the documents must be sent to Javier Morales, RMP Coordinator, within 14 days of your receipt of this letter. The documents may be sent via e-mail, fax or mail.

Javier Morales, RMP Coordinator
U.S. EPA Region 10
1200 Sixth Avenue, Suite 900, ECL-116
Seattle, WA 98101
Fax: (206) 553-0124

Please refer to the document *General Risk Management Program Guidance* for additional information pertaining to the areas of concern addressed above. This guidance document can be found on EPA's website at:
http://www.epa.gov/emergencies/content/rmp/rmp_guidance.htm#General

We urge you to take the steps necessary to address these concerns and to ensure that all aspects of your operation are conducted in accordance with all applicable federal, state, and local requirements. If in the future, additional violations are identified and/or corrections to the identified concerns are not made, EPA may proceed with enforcement action. If you have any questions about the inspection or the Risk Management Program, please contact Javier Morales, RMP Coordinator, at (206) 553-1255 or morales.javier@epa.gov.

Sincerely,

Wally Moon
Unit Manager
Emergency Preparedness and Prevention Unit
Emergency Management Program

Cc: Bill Sullivan, Director of Natural Resources, Puyallup Tribe of Indians

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Re: Risk Management Program Compliance Inspection
JCI Jones Chemical
EPA Facility ID# 1000 0007 8845

Dear Mr. Groh:

CONCURRENCE					
NAME	Javier Morales	~~Wally Moon~~			
INITIAL	JM				
DATE	1-5-12				

Cc: Bill Sullivan, Director of Natural Resources
Puyallup Tribe of Indians
3009 E. Portland Ave.
Tacoma, WA 98404

JCI Jones followup-Fw: System Inspections
Bob Hales to: Javier Morales 07/19/2011 10:50 AM

Javier,
This was forwarded to me by Mr. Casmey. Obviously didn't follow the directions but it is what we were looking for.
Thanks,
Bob Hales
Clean Air Act 112(r) Specialist
NOWCC Grantee for EPA Region 10
1200 Sixth Avenue, Suite 900 ECL-116
Seattle, WA 98101
P:(206) 553-4090
----- Forwarded by Bob Hales/R10/USEPA/US on 07/19/2011 10:46 AM -----

From: "Dan Casmey" <dcasmey@jcichem.com>
To: Bob Hales/R10/USEPA/US@EPA
Cc: "'James Groh'" <jgroh@jcichem.com>, "Tim Ross" <tross@jcichem.com>
Date: 07/19/2011 03:33 AM
Subject: System Inspections

Bob-

Good morning. One of the questions that came up during last week's RMP inspection in Tacoma pertained to our policy regarding the replacement of our filling station lines (whips) and railcar transfer lines. As was explained during the inspection, we follow the Chlorine Institute's recommendations; i.e., replacement of these lines every 24 months. While I was relatively confident that we had this policy written into one of our procedures manuals, we were able to produce only the e-mail sent to all eleven JCI facilities back on May 27, 2009 during last week's inspection. The specific reference mandating this policy is in fact written into our Mechanical Integrity program and attached is Chapter IV of our program pertaining to System Inspections. On page 4 of this chapter, our policy of changing out the whips every 24 months is clearly outlined. I'd like to think I can remember exactly on which page of which manual each of our policies and procedures is spelled out but unfortunately, this was not the case last week. I hope the attached addresses your question regarding this and if not, please let me know.

Thank you,
JCI JONES CHEMICALS INC.

DAN CASMEY
Executive VP of Safety, Security & Regulatory Compliance
dcasmey@jcichem.com

1-330-825-4521 Mechanical Integrity - System Inspections - 15 December 09'.pdf

System Inspections

System Inspections are an integral part of our overall Mechanical Integrity Program. System Inspections are inspections of an entire system, such as the chlorine system, as opposed to inspections of individual pieces of equipment such as a compressor.

The "System Inspection" is designed to verify and document that a system meets established industry standards thereby ensuring safe and efficient operation. JCI uses the Chlorine Institute's Pamphlet #6 (Chlorine Systems for Dry Chlorine) as its primary Industry Reference.

The "System Inspection" is designed to cover all major components and associated parts of the system being inspected. The person conducting the inspection must document the condition of the system being inspected and note any system deficiencies that have been identified. The inspector must make general comments on the entire systems condition, sign and date the inspection. Management will utilize inspection results to prioritize maintenance assignments, evaluate the overall condition of the system, and establish a projected correction dates. All corrections will be documented upon completion.

Note: In accordance with JCI's 'Line Breaking Procedures', any system connected by or to piping must be purged of all pressure and chemical hazards prior to beginning any piping inspection. Sources of product or energy must be locked out in accordance with JCI's policy and procedures.

Following are the procedures to be used in conducting the System Inspections:

Internal Piping:

Once the piping to be inspected has been relieved of all pressure and purged of all chemical hazards, the internal inspection can begin. The internal inspection involves the breaking of lines and a visual inspection of the inside of the piping system. The piping system is to be inspected for the following:

Compressed Gases

Chlorine / Sulfur Dioxide / Air

- ✓ Moisture or Wetness – The internal piping should be clean and dry. Moisture mixed with Chlorine or Sulfur Dioxide forms very strong acids that will attack the piping itself. Particular attention should be paid to blow and vacuum lines. If moisture or wetness is present, the system must be cleaned and properly dried.
- ✓ Solids Buildup – The pipeline should be free of any solids buildup. Solids buildup can result in blockage throughout the piping system. This both reduces system efficiency and creates a potential safety hazard. Particular attention should be paid to any areas in the pipelines having multiple elbows, tees or valves in series. Another area to pay particular attention to is the piping leading into "blow" or "vacuum" tons and areas in which pipeline size has been reduced. If solids buildup is present, the system must be cleaned

and properly dried. If cleaning does not clear the line of solids build up the line must be replaced.

- ✓ Weak wall thickness – JCI uses SCH 80 piping. Special attention should be paid to low areas in the piping system and drip legs. Any significant loss of pipe thickness should be noted and result in immediate replacement. This is accomplished by having designated piping coupons Ultrasonic Tested in accordance with Appendix A

Liquid Pipelines

Caustic / Bleach / Sodium Bisulfite

- ✓ Solids Build Up – Due to the nature of the liquid products we handle at JCI Branches the pipeline should remain free of solids buildup. Solids build up can result in blockage in the piping system. Pay particular attention to piping leading to eductors and heat exchangers. If a buildup of salts is found the system must be cleaned. It is acceptable to clean isolated sections of a liquid piping system.

External Piping

The external pipe inspection is an inspection of the piping exterior. Piping is to be inspected for the following:

- ✓ Deformities in the Piping or Fittings - Pipelines and fittings should be inspected for signs of excessive wear, tear and excessive corrosion or pitting. Particular attention should be given to rail car hook up nipples and any area where the system is disassembled on a routine basis. If the piping or fittings show any signs of excessive ware, tear, corrosion or pitting then it must be replaced. Plastic Piping and fittings that appears to be light grey or white in appearance must be carefully examined for sign of fatigue or stress cracking.
- ✓ Deformed Piping from Overheating – Pipelines should be properly supported to prevent sections from sagging. Attention should be given to long runs of plastic pipe (PVC, CPVC). Sagging pipe is an indication that the pipe has either been weakened due to excessive product temperature and or is inadequately supported. Sagging pipe should be replaced.
- ✓ Leaks – Most leaks in a piping system are easily detected. Excessive buildups of salts on the outsides of caustic, bleach or bisulfite lines are indications of a small leak. Leaks need to be repaired immediately.

Piping Support

All piping is to be properly supported and secured. Supports should be properly bolted or welded to the supporting part of the building, in which to hold them. "Unistrut" is to be used whenever possible and properly secured with piping "unistrut clamps." Clevis hangers can also be used for pipe support. Pay particular attention to unistrut clamps. Ensure pipe clamps used are for piping as opposed to electrical conduit clamps and properly sized. Piping hangers that are found to be in a state of disrepair need to be replaced or repaired. At no time is common

electrical wire, pipe strapping, rope or wood knee braces authorized to support chemical piping systems.

Painting

All Plant piping needs to be properly painted. The piping is to be painted in accordance with the JCI color-coding system as outlined in EN - XXXV. Painting is an ongoing process and needs regular attention.

Labeling

All piping, tanks, pumps, heat exchangers and valves need to be properly labeled. Piping should be labeled with the product as well as an arrow indicating the direction of flow of the product. Any labels found in disrepair need to be changed. All labeling should be in accordance with the JCI labeling program. (EN – XXXV)

Manual Valves

All manual valves on a system must be in proper working order and functioning properly. All valves should be examined for:

- ✓ Stem Leakage – The valve should not have any leakage through the stem packing. If the packing is found to be leaking, the packing should be tightened or the valve replaced.
- ✓ Proper Operation – The valve should open and close properly. All manual valves should be inspected on a regular basis; especially valves not used on a routine basis such as "service" or redundant type valves. If the valve does not operate properly, it should be repaired or replaced.
- ✓ Properly Fitting Handle – The valve handle should fit properly and be tightened to an appropriate level. Particular attention should be paid to valves with stamped handles such as the "JB Clincher Valve" which tends to "hourglass" over time. Broken or worn out handles should be replaced.

Actuated Valves

All actuated valves on a system must be in proper working order and functioning correctly. The valve should be examined for:

- ✓ Stem Leakage – The valve should not have any leakage through the stem packing. If the packing is found to be leaking, the packing should be tightened or the valve replaced.
- ✓ Proper Operation – The valve should open and close properly. All actuated valves should be operated on a regular basis, especially redundant type valves. If the valve does not operate properly, it should be repaired or replaced. Particular attention should be paid to the air open / spring close valves as they are typically used as "emergency" type valves throughout our Plants.
- ✓ Actuator – The valve actuator should be free of excessive corrosion. The actuator should not have any air leakage and the air supply must be dry and free of rust or dirt. Air leaks should be repaired. Actuators with excessive corrosion should be replaced.

- ✓ Solenoids – The solenoid must work properly. The solenoid unit must be free of corrosion and the electrical wires must not be exposed to a corrosive atmosphere. Any solenoid not working properly should be replaced.
- ✓ Linkage – Ensure the linkage between the actuator and the valve is aligned properly and secure. Realign or properly secure the linkage as necessary.

Check Valves

Check Valves are used to ensure product is flowing one way and that it cannot back up into a particular system. (i.e., bleach machine,) The check valves used at JCI are primarily Ball Check or Swing Check Valves. In either case, the check valve must be examined to ensure the swing or ball has free movement and that they properly seal. This can normally be accomplished by disassembling the check valve or removing its inspection plate. Check valves that fail to seal off product should be repaired or replaced.

Tubing

Tubing should be inspected for cracking, flat spots, and or deformities. Tubing should be dry and free of moisture. Securing fittings should be in good shape with no detectible air leaks. Replace any tubing or fittings that are not in pristine shape.

Gauges

Gauges should function correctly and be accurate. The gauges should be checked for damage and calibration. Chlorine gauges and sulfur dioxide gauges should have protective diaphragms between the gauge and the product. Damaged gauges or those that are "out of calibration" need to be recalibrated or replaced.

Whips

Product transfer whips should be inspected for whip integrity. The whip should be free of kinks, flat spots, frayed or chafe guard, and leaks. Whips cannot be repaired and must be replaced if any damage is found. In accordance with established JCI policy all whips to include railcar and station whips are to be replaced every two years.

Expansion Chamber

The chlorine and sulfur dioxide expansion chambers are designed to relieve excessive pressure on the chlorine or sulfur dioxide systems. The expansion chamber must be checked for the following:

- ✓ Security – The expansion chamber should be properly secured. Re-secure if found to be loose.
- ✓ Gauge – (Follow gauge inspection procedures.)
- ✓ Manual Valves – (Follow manual valve inspection procedures.)
- ✓ Rupture Disc – Read the gauge prior to degassing the system. If the gauge shows any pressure, then the rupture disc has been ruptured and must be replaced.

Vacuum Ton

The vacuum ton is designed to provide an additional volume of vacuum. The vacuum ton must be checked for the following:

- ✓ Security – The vacuum ton should be properly secured. Re-secure if found to be loose.
- ✓ Gauge – (Follow gauge inspection procedures.)
- ✓ Manual Valves – (Follow manual valve inspection procedures.)
- ✓ Ton Container – After ensuring the ton container is empty, an internal inspection should be completed using a fiber optic light. (The inspection should follow the same procedure as an internal inspection of piping.)
- ✓ Actuated Valve – (Follow actuated valve inspection procedures.)
- ✓ Pressure Switch – The pressure switch should be checked for accuracy and electrical corrosion. The switch should be checked using a known pressure source, such as nitrogen, for proper performance. If the pressure switch does not function correctly, it should be repaired or replaced.

Blow Ton

The blow ton is designed to allow liquid chlorine or sulfur dioxide to turn to gas prior to entering the manufacturing vats. The blow ton must be checked for the following:

- ✓ Security – The blow ton should be properly secured. Re-secure if found to be loose.
- ✓ Gauge – (Follow gauge inspection procedures.)
- ✓ Manual Valves – (Follow manual valve inspection procedures.)
- ✓ Ton Container – After ensuring the ton container is empty, an internal inspection should be completed using a fiber optic light. (The inspection should follow the same procedure as the internal inspection of piping.)

Sparge Tubes

Sparge Tubes are used to inject a compressed gas (Chlorine, Sulfur Dioxide or Air) to the bottom of a vat. Sparge tubes should be removed from a vat and inspected for stress crack and weak points. The sparge tube should be long enough to come within 12 – 20 inches of the bottom of a manufacturing vat. Particular attention should be given to the threaded connection to ensure the threads are good.

Pumps

Pumps need to operate safely and efficiently. All pumps should be checked for the following:

- ✓ Leakage – There should not be any leakage on a pump with the exception of those pumps that have packing designed to drip. In this case, the leakage should be in accordance with the manufacturer's recommendations. Leaks should be repaired as soon as possible.
- ✓ Vibration – All pumps should be properly secured to prevent unnecessary vibration, which can lead to strain on surrounding pipelines. In addition to ensuring pumps are properly secured, shims can be used to correct vibration problems.

- ✓ Knocking – Pumps should not have a "knocking" sound, which is an indication of bad bearings or unbalanced shaft drift. If found knocking, the pump should be taken out of service and the bearing and or shaft should be repaired or replaced.
- ✓ Packing – Packing on all pumps should be free from leaks. The new packing glands have both air and water supplied to them. The water in the seal flush tank should be drained and cleaned. The packing face should normally be replaced every 18 months. If found leaking, the packing must be repaired or replaced.
- ✓ Coupling Alignment – The pump coupling has to be aligned correctly to prevent excessive wear to the bearings and shaft. If the coupling is misaligned, it must be realigned.
- ✓ Amperage – The pump should not exceed the amperage stamped on the motor. To check the amperage, the electrical cover (peckerhead) is to be removed and each motor lead is to be checked for proper amperage. Excessive high amperage is a sign of a problem and can lead to further problems. If excessive amperage draw is discovered, the motor should be shut down and checked for bearing problems, shaft wear, and misalignment of the coupling or blockage in the pump. If any of these conditions are found, the pump must be repaired or replaced.

Eductors

Eductors are used to create a vacuum for the chlorine and sulfur dioxide systems. The eductor should be free of leaks and create sufficient vacuum. The eductor should be pulled, cleaned and reinstalled if it is determined to be malfunctioning.

Heat Exchangers

Heat Exchangers are used to cool the bleach or bisulfite process during manufacturing. The heat exchangers need to be checked for the following:

- ✓ Leaks – Heat exchangers should not leak. Once the system is drained, the heat exchanger should be disconnected and pressure tested with 30 psi of air to ensure there are no internal or external leaks. All leaks should be repaired prior to the unit being reinstalled. Internal heat exchanger leaks can cause damage to the cooling system and or the heat exchanger itself.
- ✓ Gauges – (Follow gauge inspection procedures) Gauges should be mounted on 'water in', 'water out', 'product in', and 'product out feed lines to the heat exchangers.
- ✓ Blockage – Significant pressure drops across the heat exchanger are an indication of blockage. If the exchanger is blocked, it must be disassembled, cleaned and rebuilt.
- ✓ Secured - The heat exchanger should be properly secured. If found to be loose, it should be properly secured.

Tanks

There are three kinds of tanks used at the Branches: FRP, Poly and Steel. Tanks need to be checked for the following:

- ✓ Leaks - The tanks should be free of leaks. If a leak is discovered on a tank, it must be repaired or the tank must be replaced. Particular attention should be paid to the discharge flange bolt holes on poly tanks as they can develop stress cracks on or near bolt holes.
- ✓ Vents – All tanks must be vented. Tanks that do not have an open top must have "U vents" on them. Ensure the tank is properly vented to prevent implosion.
- ✓ Internal Inspection – Tanks should be internally inspected annually. This does not necessarily mean that the tank must be entered. The tank is internally examined for contaminates and tank integrity. Pay particular attention to the FRP tanks for fiberglass degradation. If a tank is determined to be contaminated or its integrity is found to be suspect, it must be taken out of service until cleaned, repaired and or replaced. If the tank must be entered to be inspected or cleaned, you must follow 'Permit Required Confined Space Entry' procedures as outlined in SF II.
- ✓ External Inspection – All tanks are to be examined for excessive corrosion, deformities or any signs of deterioration. Pay particular attention to steel tanks that are exposed to water and weather. Tanks found to have excessive corrosion, deformities, or unacceptable deterioration (wear and tear) must be taken out of service until repaired or replaced.

Expansion Joints

Expansion joints are installed between the tank and the pump. Expansion joints absorb the vibrations of the pump, which would otherwise shake the tank's discharge fittings. Expansion joints are to be kept free of leaks. If a leak is found on an expansion joint, the expansion joint must be repaired or replaced. The expansion joint has a pre-set expansion limit that must not be exceeded. If the pre-set limit has been exceeded, the expansion joint must be repaired or replaced.

Electrical Connections

All electrical connections should be tight, covered, and sealed. In the event, any are found to be loose and uncovered, repair or replace as necessary.

Control Panel

There are many types of control panels at our facilities. They are used on the bleach machine and on almost every mitigation system the Branch uses as an example, the quadscan. Control panels should be checked for the following:

- ✓ Closed and Sealed – All control panels need to be closed and free of fugitive fumes. They should be clean and free of dirt and dust.
- ✓ Labeled – Control panels should be properly labeled to include alarms, buttons, switches, and lights.
- ✓ Buttons and or Switches – Buttons or switches should be tight and proper secured to the control panel. The button or switch should move freely as designed.
- ✓ Panel Lights – Panel lights should all work. Lights that are burned out should be replaced.
- ✓ Electrical Connections – Panel electrical connections should be tight and have conduit or other electrical connection methods of ensuring an air tight connection.

- ✓ Extra Penetrations – Any unused penetrations in the box or door must be properly blanked off. Tape is not authorized.

Function Test

Test the system under normal operating conditions to ensure all equipment is working within the established parameters as designed. Any portion of equipment not working within the designed parameters has be investigated, then repaired or replaced.

Plant Emergency – Stop Button

Plant "E – Stop" buttons are strategically located throughout our facilities and are designed to stop the flow of all chlorine and sulfur dioxide in the building. E – Stop Buttons are to be checked for the following:

- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ E -Stop Button – The scale is also equipped with an E - Stop button. The button is to be pressed and if the actuated valves hooked to the gas detection system fail to close, the button is to be replaced.
- ✓ Alarms – (Follow alarm testing inspection procedures.)
- ✓ Function Test – (Follow function test inspection procedures.)

Alarms

We utilize two types of alarms at the Branches; audio and visual. Audio alarms come in a variety of sounds and tones so that they can be easily identified. Visual are normally yellow and or red rotating flashing lights. Yellow indicates a warning parameter has been reached and red indicates shutdown parameter has been exceeded. Alarms should be checked for the following:

- ✓ Function Test – (Follow function test inspection procedures.)
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)
- ✓ Mounting – Audio alarms and visual alarms should be properly mounted to ensure they are secure and free of fugitive fumes.
- ✓ Lights – Lights should work and rotate when activated.
- ✓ Audio Alarms – Audio alarms should be loud enough so that personnel in the immediate area can hear them.

Hoses

Chemical hoses are used to transfer liquid products. Hoses are to be checked for the following:

- ✓ Hose – The hose is to be checked for kinks, splits, flat spots and leaks. The hose should be tested annually at 1½ times its normal working pressure. **Note: Specific hose working pressures can be obtained from the vendor.** Hoses that are damaged should be repaired or replaced.
- ✓ Fittings – Hose fittings should be checked for tightness of the connection. (Banding or Hose Clamps). They should also be checked to ensure the connection is not worn or damaged. Pay particular attention to Poly fittings as they are easily damaged. The

female fitting should have good gaskets in them. Any fitting that needs to be shimmed must be replaced. Any fitting that is not tight must be retightened and any fitting that is worn must be replaced.

Air Dryer

The purpose of the air dryer is to provide dry air to the Plant. Pad air must be – 40 dew point. Plant air should be as close to – 40 dew point, as possible. The air dryer should be checked for the following:

- ✓ Air Leaks - The air dryer should be free of air leaks. All air leaks should be repaired.
- ✓ Air Cycle – The dryer is set on a timer. It should cycle properly and provide dry air. If the cycling is not correct, consult your Tech Manual.
- ✓ Moisture Indicator – The moisture indicator should be blue. If the indicator is pink, the dryer needs to be regenerated.
- ✓ Electrical Connections – Check electrical connections for loose wires. Loose wires should be tightened and kept covered.
- ✓ Desiccant – Desiccant should be changed, at a minimum, every five years.

Demister

The purpose of the demister is to filter out oil that comes off the compressor. The demister separates the oil from the air vapors. The demister is maintenance free. The electric solenoid valve must be checked to ensure it opens and closes when it is supposed to. The solenoid valve is set on a timer that opens and then closes the valve. If the valve does not open and close when it is supposed to, then the valve must be repaired or replaced. The demister will need to be rebuilt on a periodic basis. Consult your tech manual.

Compressor

Compressors are one of the primary infrastructure systems which the entire plant depends on. Without compressed, air we could not operate our facilities. The compressor is annually serviced by outside vendors who specialize in the particular make and model however, the compressor should be checked for the following:

- ✓ Annual Service – Outside vendor
- ✓ Oil and Oil Filter – Check and or change oil.
- ✓ Filters – Check and or change air filter.
- ✓ Aftercooler – Check and clean aftercooler. Remove aftercooler if necessary.
- ✓ Motor – Ensure motor is clean, free of dirt, and properly aligned.
- ✓ Leaks – Check entire compressor system. Ensure there are no leaks of air, oil, water or hydraulic fluid. Repair all leaks. Ensure compressor is clean.

Air Tank

The air tank serves as a receptacle for air. The tank is to be checked for the following:

- ✓ Security – The tank should be secured to the floor to prevent movement. If the tank is not secured to the floor, ensure it is done as soon as possible.
- ✓ Water – The tank should be kept free of excess water.
- ✓ Electric Solenoid Valve - Ensure that the electric solenoid valve opens at the pre-set time. If the solenoid valve does not open at the pre-set time, repair or replace the valve.
- ✓ Pressure Relief Valve – The pressure relief valve is rated for the tank pressure. The relief valve is to be checked with nitrogen at the relief valve pressure. If the relief valve does not open at the pre-set level the valve must be replaced.

Air System - Pre–Filter

The purpose of the air pre–filter is to filter out water or moisture prior to the air dryer. The pre–filter should be checked for air leaks and all air leaks should be repaired. The filter cartridge should be changed when the indicator arrow is in the red or has a pressure differential of more than 5-PSI above the accepted pressure differential across the filter. (Note: A 2-PSI pressure drop, across the filter, equals a 1% horsepower reduction.) Ensure that the electric solenoid valve opens at the pre-set time. If the solenoid valve does not open at the pre-set time, repair or replace the valve.

Air System – After Filter

The purpose of the after filter is to filter out degraded desiccant from inside the air dryer. The after filter should be checked for air leaks and all air leaks should be repaired. The filter cartridge should be changed when the indicator arrow is in the red or has a pressure differential of more than 5-PSI above the accepted pressure differential across the filter. (Note: A 2-PSI pressure drop, across the filter, equals a 1% horsepower reduction.)

Dew Point Indicator

The 'Dew Point Indicator' is designed to read the dew point level in an air piping system. The dew point indicator must be checked for the following:

- ✓ Control Panel – (Follow control panel inspection procedures.)
- ✓ Function Test – (Follow function test inspection procedures.)
- ✓ Probe – Replace dew point probe annually.

ORP/ Temperature or pH / Temperature Probe

The probes are the main component of the Vat Control System. The ORP / Temperature (bleach) probe must be checked to ensure it is properly calibrated. This is done by removing the probe from the tank and checking it in a buffered solution. If any probe is determined to be out of calibration, it must be recalibrated or replaced. The same process is to be used for the pH / Temperature (sodium bisulfite) probe. Probes out of calibration are to be recalibrated or replaced.

Boiler

The Boiler is a critical piece of equipment and particularly for those branches located in the mid-west and northeast. In addition to providing heat for the building(s), it is also used extensively to

provide steam to both caustic railcars and lines to prevent them from freezing up. The boiler is to be inspected and serviced once an outside vender and the following inspections must be conducted by Branch personnel as well.

- ✓ Piping and Piping Supports– (Follow piping and piping supports inspection procedures)
- ✓ Manual Valves – (Follow manual valve inspection procedures.)
- ✓ Pump – (Follow pump inspection procedures.)
- ✓ Tank – (Follow tank inspection procedures.)
- ✓ Hoses – (Follow hose inspection procedures.)
- ✓ Lagging – Insure steam pipes and return lines are properly lagged and insulated.
- ✓ Steam Traps – Ensure steam traps are working correctly. Repair or replace steam traps that are not functioning correctly or broken.

Gas Detection System

The 'Gas Detection System' is designed to detect fugitive emissions and shut down the flow of Highly Hazardous Chemicals into the plant. The Gas Detection System is to be checked for the following:

- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ Detection Transmitter - The detection transmitter is to be mounted close to the floor, however, adequate room is to be left for cleaning under the transmitter. Any transmitter that is not properly mounted must be remounted and or relocated.
- ✓ Detection Sensors – The sensors are to be calibrated using a calibration kit. Any sensor determined to be out of calibration should be recalibrated or replaced. (Note: The sensor pucks may need to be changed.)
- ✓ Detection Receiver – The detection receiver must be clean and kept free of fugitive fumes. It must be mounted in such a way that will not be damaged.
- ✓ Electrical Connections – (Follow electrical connection inspections procedures.)
- ✓ Control Panel – (Follow control panel inspection procedures)
- ✓ Alarms – (Follow alarm testing inspection procedure.)
- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ Plant E – Stop – (Follow plant E-Stop inspection procedures.)
- ✓ Function Test – (Follow function testing inspection procedures.)

Vat Control System

The 'Vat Control System' is designed to shut down a process vat due to overheating or lack of excess caustic. The system works the same way regardless of whether the vat is processing bleach or sodium bisulfite. The Vat Control System is to be checked for the following:

- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ Tubing – (Follow tubing inspection procedures.)
- ✓ ORP / pH Temperature Probe – (Follow ORP / Temperature – pH / Temperature Probe Procedure)

- ✓ Controller – The controller is to be adjusted first to a known strength of product, then to a known temperature to force an alarm and finally to the shutdown parameters to ensure the system is working correctly. Any controller that is not working correctly should be repaired or replaced.
- ✓ E Stop – The E stop should be pressed during operations to ensure it is working correctly. Replace or repair E - Stops that do not shut down the Vat Control System.
- ✓ Control Panel – (Follow control panel inspection procedures.)
- ✓ Alarms – (Follow alarm testing inspection procedures.)
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)
- ✓ Function Test – (Follow function test inspection procedures.)

Tank Level Monitoring System

The 'Tank Level Monitoring System' is used to monitor the level of liquid in a tank. High and low level alarms are used to warn when "pre-set" limits have been exceeded. The system must be checked for the following:

- ✓ Control Panel – (Follow control panel inspection procedure.
- ✓ Accuracy – The tank level monitoring system has to be checked to ensure accuracy. This is to be done following the manufacturer's procedures as explained in "Milltronics -Tech Manual" (PL-519 for the SPL Model or PL- 421 for the DPL Model).
- ✓ High Level Alarms – High level alarms can be checked by simply watching the tank fill to the pre-set level or adjusting the high level limits on the leveling unit to a known level in the tank to ensure it will sound the alarm. Any alarm that will not sound when required should be repaired or replaced.
- ✓ Low Level Alarms - Low level alarms can be checked by simply watching the tank empty to the pre-set level or adjusting the low level limits on the leveling unit to a known actual level in the tank to ensure it will sound the alarm. Any alarm that will not sound when required should be repaired or replaced.
- ✓ Transducer – The transducer must be mounted securely in the top of the tank and all electrical connections must be sealed properly to prevent exposure to corrosive atmospheres. Remount and recalibrate the transducer if found to be loose.
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)
- ✓ Function Test – (Follow function test inspection procedure.)

Vacuum Alarm System

The 'Vacuum Alarm System' is designed to alert and shut down the vacuum system when loss of vacuum is occurring. The vacuum alarm system is to be checked for the following:

- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ Control Panel – (Follow control panel inspection procedure.)
- ✓ Alarms – (Follow alarm testing inspection procedures.)
- ✓ Gauges – (Follow gauge inspection procedures.)
- ✓ Tubing – (Follow tubing inspection procedures.)

- ✓ Pressure Switch – The pressure switch should be tested by applying a known amount of pressure (regulated Nitrogen) and setting the alarm off and forcing a shutdown of the actuated valve. Should the pressure switch fail to respond, it must be recalibrated or replaced.
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)
- ✓ Function Test – (Follow function test procedures.)

Scale Shutdown

The 'Scale Shutdown' is designed to prevent the overfilling of containers. The scale shuts off an actuated valve once a pre-set weight has been obtained. This system is to be checked for the following:

- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ Tubing – (Follow tubing inspection procedures.)
- ✓ Scale – The scale is to be calibrated and then a known weight is to be placed on the scale to activate the actuated valve. If the valve fails to close, then the scale is to be repaired or replaced.
- ✓ E -Stop Button – The scale is also equipped with an E - Stop button. The button is to be pressed and if the actuated valve fails to close, then the button is to be replaced.
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)
- ✓ Function Test – (Follow function test procedures.)

Air Back Flow Prevention System

The "Air Back Flow Prevention System" is designed to shut off the air being supplied to the compressed gas railcars if the pressure on the compressed gas railcars exceeds the pressure on the air compressor. The "Air Back Flow Prevention System" is to be checked for the following:

- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ Manual Valves – (Follow manual valve inspection procedures.)
- ✓ Gauge – (Follow gauge inspection procedures.)
- ✓ Control Panel – (Follow control panel inspection procedure.)
- ✓ Tubing – (Follow tubing insertion procedure.)
- ✓ Pressure Switch – The pressure switch should be tested by applying a known amount of pressure utilizing a regulated nitrogen supply, setting the alarm off and forcing a shutdown of the actuated valve. Should the pressure fail to respond, it must be recalibrated or replaced.
- ✓ Pressure Differential Switch – Apply a known pressure to the downstream side of the pressure differential switch and ensure the actuated valve closes. If the valve does not close, repair or replace the pressure differential switch.
- ✓ Alarms – (Follow alarm testing inspection procedures.)
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)
- ✓ Function Test – (Follow function test procedures.)

Railcar Valve Closure System

The 'Railcar Valve Closure System' is designed to shut off the flow of chlorine or sulfur dioxide being supplied from the compressed gas railcars. The system works in conjunction with the Gas Detection System and Plant Panic Buttons to physically close the railcar angle valves when activated. The railcar valve closure system is to be checked for the following:

- ✓ Pneumatic Actuators (Air Motor) -
- ✓ Torque Adaptors – Examine torque adapters (Low and high) for signs of excessive wear. Replace as necessary.
- ✓ Pneumatic Hoses – Examine hoses for splits, cracks, dry rot and deformities. Inspect hose fittings for serviceability. Replace hoes or fittings as needed.
- ✓ Air Hose Brackets and Manifolds – Examine air hose brackets and manifolds for serviceability. Repair or replace as needed.
- ✓ Control Panel – (Follow control panel inspection procedure.)
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)
- ✓ Alarms – (Follow alarm testing inspection procedures.)
- ✓ Air Tanks – (Follow air tank inspection procedures.)
- ✓ Manual Valves – (Follow manual valve inspection procedures.)
- ✓ Actuated Valves – (Follow actuated valve inspection procedures.)
- ✓ Pressure Regulator – Ensure pressure regulator is working correctly.
- ✓ Air Filter – Pull air filter and clean as necessary. Ensure no air leakage.
- ✓ Check Valve – (Follow check valve inspection procedures.)
- ✓ Gauge – (Follow gauge inspection procedures.)
- ✓ Pressure Switch – The pressure switch should be tested by first closing the incoming air supply's manual valve. Slowly bleed off the air from the air tank's drain valve while observing the pressure gauge next to the pressure switch. When the pressure drops to approximately 80 psi, the system should activate.
- ✓ Rotometer- Examine rotometer ensure it is clean and free of moisture and debris. Ensure ball is free flowing.
- ✓ Panic Buttons – (Follow Panic button inspection procedures.)
- ✓ Function Test – (Follow function test procedures.)

Filters

Many of the Branches use filters to filter finished bleach. Bleach filters are to be checked for the following:

- ✓ Leaks - Filters should be free of leaks. If a leak is discovered on the filter, it must be repaired or replaced.
- ✓ Gauge – (Follow gauge inspection procedures.)
- ✓ Filters – If there is a significant pressure drop across the filter; i.e., more than the acceptable 5-PSI, the filters need to be changed. Also examine the filter spool or baskets for deterioration or cracking. Broken filter components must be repaired or replaced.

Scrubbers

Several Branches have scrubbers for bleach or bisulfite fumes. Scrubbers are to be checked for the following:

- ✓ Piping – (Follow piping inspection procedures.)
- ✓ Piping Support – (Follow piping support inspection procedures.)
- ✓ Tank – (Follow tank inspection procedures.)
- ✓ Pump – (Follow pump inspection procedures.)
- ✓ Fan – The fan must be in proper working order for the scrubber to work. The fan should turn freely and be balanced. If the fan is not turning freely or the fan motor bearings are worn out then the fan or fan motor must be replaced.
- ✓ Manual Valves – (Follow manual valve inspection procedures.)
- ✓ Flow Meter - The flow meter measures the flow of caustic recirculation. Pump cavitations or restricted product flow is a sign of salting. If obstructed flow is found, the pump must be cleaned out, repaired or replaced.
- ✓ Electrical connections – (Follow electrical connection inspection procedures.)

Bleach Machine

The bleach machine is a critical piece of equipment not only due to the fact that it is singularly, probably most expensive piece of equipment at any Branch, but also because a properly running machine is vital to the Branch being able to meet its production requirements. Given that the machine, with few exceptions, runs daily, its performance each day should be closely monitored by the employee responsible for operating it. In addition to daily systems checks, the following inspections are to be performed by Branch personnel.

- ✓ Piping – (Follow piping inspection procedures.)
- ✓ Piping Supports – (Follow piping supports inspection procedures.)
- ✓ Tubing – (Follow tubing inspection procedures.)
- ✓ Painting – (Follow painting inspection procedures.)
- ✓ Labeling – (Follow labeling inspection procedures.)
- ✓ Manual Valves – (Follow manual valves inspection procedures.)
- ✓ Actuated Valves – (Follow actuated valves inspection procedures.)
- ✓ Check Valves – (Follow check valves inspection procedures.)
- ✓ Gauges – (Follow gauge inspection procedures.)
- ✓ Pump – (Follow pump inspection procedures.)
- ✓ Heat Exchanger – (Follow heat exchanger inspection procedures.)
- ✓ Tank – (Follow tank inspection procedures.)
- ✓ Air Filter – Air filter should be removed, cleaned or replaced. In addition there should be no air leaks.
- ✓ ORP Probe – (Follow ORP probe inspection procedures.)
- ✓ Reactor – Examine reactor for signs of leakage or deterioration of the reactor itself or the associated hardware.

- ✓ Pressure Differential Switch – Apply a known pressure to the downstream side of the pressure differential switch and ensure the actuated valve closes. If the valve does not close, repair or replace the pressure differential switch.
- ✓ Pressure Switch – The pressure switch should be tested by applying a known amount of pressure (regulated Nitrogen) and setting the alarm off and forcing a shutdown of the actuated valve. Should the pressure switch fail to respond, it must be recalibrated or replaced.
- ✓ Control Panel – (Follow control panel inspection procedures.)
- ✓ Alarms – (Follow alarm inspection procedures.)
- ✓ Rotometer- Examine rotometer ensure it is clean and free of moisture and debris. Ensure ball is free flowing.
- ✓ Current to Air Converters – Perform function test. Consult tech manual.
- ✓ Flow Meters – Perform function test. Consult tech manual.
- ✓ DP Cell – Perform function test. Consult tech manual.
- ✓ Radar Level Control - Perform function test. Consult tech manual.
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)

Bleach Filter System

The 'Bleach Machine Filter System' is critical to the ability of the Branch being able to meet the demands of those customers requiring pristine bleach. There are several components comprising this system and following are the inspections to be performed on each of them by Branch personnel:

- ✓ Piping – (Follow piping inspection procedures.)
- ✓ Piping Supports – (Follow piping supports inspection procedures.)
- ✓ Tubing – (Follow tubing inspection procedures.)
- ✓ Painting – (Follow painting inspection procedures.)
- ✓ Labeling – (Follow labeling inspection procedures.)
- ✓ Manual Valves – (Follow manual valves inspection procedures.)
- ✓ Actuated Valves – (Follow actuated valves inspection procedures.)
- ✓ Pressure Relief Valve – Ensure the pressure relief valve is working correctly. Test with pressure source.
- ✓ Gauges – (Follow gauge inspection procedures.)
- ✓ Pump – (Follow pump inspection procedures.)
- ✓ Control Panel – (Follow control panel inspection procedures.)
- ✓ Tank – (Follow tank inspection procedures.)
- ✓ Air Filter – Air filter should be removed, cleaned or replaced. In addition there should be no air leaks.
- ✓ Filter Barrel – Examine the filter barrel for any signs of excessive wear or leakage. In addition, examine all filter plates, spacers, and inner and outer cloths for damages or deterioration. Examine filter shaft for signs of damage or excessive wear. Clean entire filter barrel inside and out.

- ✓ Filter Shaft Motor – Ensure the shaft motor works correctly and has the proper amount of oil. The motor should turn freely and show no signs of binding. Ensure the shaft packing is tight and not leaking.
- ✓ Electrical Connections – (Follow electrical connection inspection procedures.)

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Compressed Gas Systems:

- ✓ Air System
- ✓ Chlorine System
- ✓ Sulfur Dioxide System

Liquid Systems:

- ✓ Bisulfite System
- ✓ Bleach Machine System
- ✓ Bleach Vat System
- ✓ Caustic System
- ✓ Acid System

Mitigation Systems:

- ✓ Air Backflow Prevention System
- ✓ Gas Detection System
- ✓ Railcar Valve Closure System / Panic Buttons
- ✓ Scale Shut-down System
- ✓ Tank Leveling System
- ✓ Vacuum Alarm System
- ✓ Vat Control System

Infrastructure Systems:

- ✓ Boiler System
- ✓ Sprinkler System
- ✓ Water Backflow Prevention System

Miscellaneous Systems:

- ✓ Bleach Filter System
- ✓ Scrubber System